

## REMARKS

Reconsideration and allowance of the application on the basis of the foregoing amendments and for other reasons are respectfully requested.

Twenty claims were pending in the application. All were rejected. Claim 14 was objected to. The specification was objected to.

The specification was objected to for a title that "is not descriptive", and a new title was required. Applicants have amended the application to adopt the one so kindly suggested by the Examiner: ""Phone Privacy and Unobtrusiveness via Voice Cancellation".

The specification has been further amended to correct some obvious errors. Thus the first sentence in the second full paragraph on page 5 has been amended to change the words "sensors" and "actuators" to "speakers" and "sensors" respectively, to correspond with the adjectives for the numerals "4" and "5" in the preceding paragraph and otherwise in the second paragraph and with the drawings. Claim 14 was objected to, the Examiner stating that "sr" should be "are". The correction has been made.

Claim 18 was rejected under 35 USC 112, 2<sup>nd</sup> paragraph, "as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention", and "as being incomplete for omitting essential elements, such omission amounting to a gap between the elements". The claim has been amended to make clear on what is input into the signal processor. Thus the claim now reads "picking up the voice via a microphone and delivering it as an electrical signal to the transmission line".

The claim has been further amended to make "clear whether the microphone or modulator is subtracting from the transmission line". Thus it also now reads: "inputting the signal from the transmission line before the modulator into a signal processor and

providing outputs therefrom to a speaker near the microphone to generate a voice cancellation sound and to the modulator to enable it to subtract from the transmission line downstream from the modulator electrical voice cancellation sound signal picked up by the microphone".

Claim 19 (and claim 20 because it depends on claim 19) was rejected under 35 USC 112, first paragraph, as failing to comply with the enablement requirement, the Examiner stating that "The claim contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claim states 'providing omnidirectional voice cancellation sound from a set of speakers of which said speaker is just one near the microphone and arranged in a spherical pattern about the microphone'. A single speaker cannot form a pattern." Applicant agrees. But applicant was not endeavoring to so state. Applicant was endeavoring to state that the speaker of claim 18 was one of the set of speakers arranged in a spherical pattern.

To make applicant's claim 19 more clear, applicant has further amended claim 18 to read: "inputting the signal from the transmission line before the modulator into a signal processor and providing outputs therefrom to a speaker near the microphone to generate a voice cancellation sound which too is picked up by the microphone and delivered as an electrical signal to the transmission line before the modulator and to the modulator to enable it to subtract from the transmission line downstream from the modulator electrical voice cancellation sound signal picked up by the microphone".

Claim 20, dependent on claim 19, is deemed to have been enabled too by the further amendment of claim 18.

Any inconvenience occasioned by the errors, is regretted.

Claims 1, 2, 4, 5, 7, 15, and 16 were rejected under 35 USC 103(a) as being unpatentable over Berger et al (5,526,421) in view of Matouk et al (5,625,684), the

Examiner observing that Berger discloses an electrical voice transmission system comprising and electrical transmission line, microphone 13, remote transmission block 22, speakers 14, and a signal processor 20. The Examiner particularly states that Berger's remote transmission block inherently comprises a modulator for the purpose of adapting the voice signal for transmission to a communications network via the electrical transmission line.

The Examiner also notes that Berger does not disclose that the processor also outputs a signal to the modulator to subtract the electrical voice cancellation sound that is picked up by the microphone.

To resolve this deficiency, the Examiner endeavors to rely on Matouk, stating that Matouk "teaches a system of active noise suppression in which environmental noise at a callers telephone is detected and a cancellation signal is generated by a processor to subtract the noise from the signal received by the recipient of the call ---, and opining that "it would have been obvious --- to use the detected noise signal --- to cancel out the noise from the signal being sent to the recipient --- for the purpose of improving the called party's ability to understand the caller's voice".

Reconsideration is requested.

Initially it should be observed that applicant's invention is directed to "a 'clean' transmission signal -- in the transmission line of a telephone system having a spatial sound cancellation feature". Neither Berger nor Matouk have this. But claim 1 (and hence all of its dependent claims) requires "a speaker near the microphone for providing a voice cancellation sound". Thus those claims distinguish structurally and patentably over the references applied.

To make the matter more clear, applicant has amended claim 1 to read: "a speaker --- for providing a spatial voice cancellation sound".

To further expedite the prosecution of the application, applicant has further amended claim 1 to require that the modulator be a "cleaning" one. Thus that portion of the claim now reads: "a modulator in said transmission line for subtracting from the transmission line downstream thereof any electrical voice cancellation sound signal picked up before by the microphone". Neither Berger nor Matouk disclose a system employing a modulator to remove the signals resulting from a voice cancellation sound, from the transmission line. In Berger, a modulator "in said transmission line for subtracting from the transmission line downstream thereof any electrical voice cancellation sound signal picked up before by the microphone" is not needed "as a mirror-image waveform with respect to the signal generated when speaking into the microphone" "is used to activate the speaker (14) thereby cancelling the user's voice". (Berger Abstract). In Matouk, not a voice cancellation sound signal, but a signal representative of ambient noise other than voice and from a separate and differently facing speaker, is subtracted from the transmission line via a modulator.

Thus neither Berger nor Matouk nor a combination thereof teaches a system wherein the voice sound is spacially negated by providing output to a speaker to generate a voice cancellation sound and to a modulator to subtract from the transmission line downstream thereof the electrical voice cancellation sound signal picked up before by the microphone. Clearly applicant's device as set forth in claim 1 is not obvious over Berger et al in view of Matouk et al; rather, it is clearly patentable.

Claims 2, 4, 5, 7, 15, and 16, being dependent, directly or indirectly on patentable claim 1, are patentable therewith and for their additional limitations.

It should further be noted that it is improper to combine Matouk with Berger, because modifying Berger according to Matouk destroys Berger's function - spatial voice cancellation. Berger generates a mirror-image waveform of the signal formed when speaking into the microphone to activate a speaker to create a voice cancellation acoustic. Matouk takes non-voice background noise through a separate microphone, inverts the electrical signal, and electronically subtracts it from the voice microphone signal being

transmitted to leave the voice signal per se (with no spatial voice cancellation). Substituting Matouk's non-voice background noise removal technique for Berger's a mirror-image waveform of the signal formed when speaking into the microphone to activate a speaker, would result in the loss of at least part of Berger's voice cancellation acoustic. The destructive modification of one device to anticipate another was declared improper in *Ex Parte Johnson*, 17 USPQ 374 (1932): "Where modification of the structure shown by a reference to meet the claims of applicant's application would require reconstruction of the device by removing parts that are essential for the intended operation and by substituting others which were not contemplated, rejection of the claims on such a reference is not sound." See also *Johnson v. Tvedt*, 244 F. 189, which held: "In order to constitute anticipation of a patented invention it is not sufficient that the device relied upon might with some change be made to accomplish the function performed by that invention if it were not designed by its maker to accomplish it or actually used for its accomplishment."

Claims 3, 6, 8, and 17 were rejected under 35 USC 103(a) as being unpatentable over Berger et al and Matouk et al as applied to claims 1, 2, 4, and 5, and further in view of Pongsen (4,006,308), the Examiner acknowledging that Berger and Matouk "do not specify arranging the voice cancellation speakers and far-field sensors (microphones) respectively each in a spherical pattern about the handset microphone", but alleging that "Pongsen teaches that a spherically shaped speaker arrangement will offer a more natural reproduction of the original sound signal ---". The Examiner then opined that it "would have been obvious --- to arrange the voice cancellation speakers in a spherical pattern around their source (the handset microphone) for the purpose of producing a more natural reproduction of the original sound", and further opined that it "would have been obvious --- to position the far-field sensors in a similar arrangement (in a spherical pattern) as the voice cancellation speakers for the purpose of more accurately detecting the sound being produced by the speakers". Reconsideration is requested.

Pongsen does appear to teach that mounting a plurality of speakers (four) on a loudspeaker enclosure so as to radiate sound signals in at least four direction orthogonal

to the enclosure vertical axis, with one of the speakers mounted in an upper region of the enclosure, will offer a more natural reproduction of the original sound signal. But this is not a spherically-shaped speaker arrangement!

The Dell Publishing Co., Inc. "The American Heritage DICTIONARY of the English Language", New Dell Edition, Third Printing - February 1982, defines a "sphere" as "n. 1. A three-dimensional surface, all points of which are equidistant from a fixed point." Geometrically speaking, the aforementioned speakers of Ponsgren cannot be a "spherically-shaped arrangement", and hence Ponsgren does not provide the additional structure, let alone the function, called for by the claims; thus the rejection must fail for this reason too.

Claims 9, 10, 12, and 13 were rejected under 35 USC 103(a) as being unpatentable over Berger et al (5,526,421, and further in view of Matouk et al (5,625,684); the Examiner acknowledging that Berger does not disclose that the processor also outputs a signal to the modulator to subtract the electrical voice cancellation sound that is picked up by the microphone, but stating that Matouk teaches a system of active noise suppression in which environmental noise at a caller's telephone is detected and a cancellation signal is generated by a processor to subtract the noise from the signal received by the recipient of the call.

Claim 9 is directed to a device for attachment to a telephone handset having a microphone. The device must comprise a modulator for insertion in a transmission line extending from said handset; a speaker for mounting near the microphone for providing a voice cancellation sound, a signal processor receiving input from the transmission line before the modulator and providing output to the speaker to generate a voice cancellation sound and to the modulator to subtract from the transmission line downstream thereof earlier electrical voice cancellation sound signal picked up by the microphone. Berger does not provide a signal processor receiving input from the transmission line before the modulator and providing output to the speaker to generate a voice cancellation sound.

The Examiner resorts to Matouk to overcome the Berger deficiency.

But Matouk does not overcome the Berger deficiency: he too does not provide a signal processor receiving input from the transmission line before the modulator and providing output to the speaker to generate a voice cancellation sound. In his structure of Fig. 3, he deletes, via a second microphone, environmental noise from the transmission line. In Fig. 4, he creates a canceling local noise sound in the area of the voice receiving speaker, employing a second microphone to receive local environmental noise and add a sound signal to the line for the voice receiving speaker 37 to generate "to suppress the external noise present in the vicinity of the speaker 37" (col. 4, lines 37, 38). Thus Matouk does not "teach a system of active noise suppression in which environmental noise at a caller's telephone is detected and a cancellation signal is generated by a processor to subtract the noise from the signal received by the recipient of the call". Quite the converse: Matouk adds the noise to the signal to generate a local noise canceling sound. Thus it would not have been obvious "to cancel out the noise from the signal being sent to the recipient (called party) for the purpose of improving the called party's ability to understand the caller's voice", in the way it was done by applicant. Matouk is actually more like Berger: both cancel local sounds: Berger voice; Matouk ambient noises.

Claims 10, 12, and 13, being dependent directly or indirectly on claim 9, are allowable therewith, and for the additional limitations set forth in them.

The rejection of claims 9, 10, 12, and 13 should also fail for as pointed out above, the modification of Berger according to Matouk should destroy the functioning of Berger.

Claims 11 and 14 were rejected under 35 USC 103(a) as being unpatentable over Berger et al (5,526,421) and Matouk et al (5,625,684) as applied to claims 9, 10, 12, 13 and further in view of Ponsgen (4,006,308). The Examiner opined that "Berger and Matouk disclose applicant's claims 9, 10, 12, 13 but do not specify arranging the voice cancellation speakers and far-field sensors (microphones) respectively each in a spherical pattern about the handset microphone".

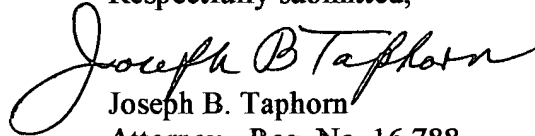
As noted above, applicant contests that "Berger and Matouk disclose applicant's claims 9, 10, 12, 13". Thus applicant urges that claims 11 and 14 being dependent directly or indirectly on claim 9, distinguish patentably over the art and are allowable therewith and for the additional limitations set forth in them.

Applicant also urges that Pongsen does not teach the additional limitations set forth in claims 11 and 14, for reasons similar to those set forth above in discussing the rejection of claims 3, 6, 8, and 17. Pongsen just does not employ a spherically-shaped speaker arrangement, nor "a set of far-field sensors for mounting more remote from the microphone than the speaker for generating error signals and sending them to the signal processor are arranged in a spherical pattern about the microphone".

Applicant believes he has made a meritorious contribution to the art, and that the claims recite this contribution.

Wherefore this application is deemed to have been placed in condition for allowance, which favorable action at an early date is earnestly solicited.

Respectfully submitted,



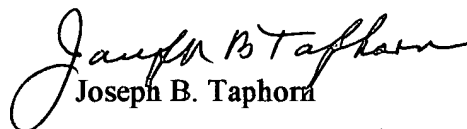
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